

WASHINGTON DEPARTMENT OF ECOLOGY
ENVIRONMENTAL ASSESSMENT PROGRAM
FRESHWATER MONITORING UNIT
STREAM DISCHARGE TECHNICAL NOTES

STATION ID: 32B100
STATION NAME: Touchet River at Bolles Road
WATER YEAR: WY 2011
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Introduction

Watershed Description

The Touchet River, the largest tributary of the Walla Walla River, flows out of the Blue Mountains in southeast Washington. Spring Chinook, steelhead, and bull trout are present within the watershed. Land use is primarily agricultural, consisting of dryland crops and irrigated farming in the lower portions.

Gage Location

This gage is located on the right bank, downstream of the Highway 125 Bridge, 3.5 miles west of the town of Waitsburg. It is located at river mile 40.4.

Table 1.

Drainage Area (square miles)	357 (Streamstats)
Latitude (degrees, minutes, seconds)	46° 16' 28" N
Longitude (degrees, minutes, seconds)	118° 13' 16" W

Discharge

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	336
Median Annual Discharge (cfs)	213
Maximum Daily Mean Discharge (cfs)	2950
Minimum Daily Mean Discharge (cfs)	37
Maximum Instantaneous Discharge (cfs)	3570
Minimum Instantaneous Discharge (cfs)	34
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	738
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	47
Number of Days Discharge is Greater Than Range of Ratings	0
Number of Days Discharge is Less Than Range of Ratings	1

Note: Statistics displayed in Table 2 may not include values in which the predicted discharge exceeds the range of ratings.

Narrative

Eight discharge measurements were taken throughout the water year, ranging from 49 to 610 cfs. The 5/16/2011 discharge measurement was discarded due to high uncertainty to the accuracy of the measurement. This measurement was not used in any rating development.

Error Analysis

Table 3. Error Analysis Summary.

Logger Drift Error (% of discharge)	3.1
Weighted Rating Error (% of discharge)	7.5
Total Potential Error (% of discharge)	10.6

Rating Table(s)

Table 4. Rating Table Summary

Rating Table No.	402	601	7
Period of Ratings	7/6/10 to 12/18/10	12/19/10 to 4/4/11	4/5/11 to 09/01/11
Range of Ratings (cfs)	24 to 7784	122 to 7780	26 to 7780
No. of Defining Measurements	16	10	6
Rating Error (%)	7.7	8.3	6.7

Rating Table No.	8		
Period of Ratings	9/2/11 to 9/30/11		
Range of Ratings (cfs)	26 to 7780		
No. of Defining Measurements	9		
Rating Error (%)	7.8		

Rating Table No.			
Period of Ratings			
Range of Ratings (cfs)			
No. of Defining Measurements			
Rating Error (%)			

Narrative

The water year began under rating 402. Channel scour due to a series of precipitation events led to rating 601. Seasonal run-off in early April led to channel scour and the shift to rating 7. Rating 8 began in late September. This shift was a result of fine-sediment movement causing channel fill.

Stage Record

Table 5. Stage Record Summary

Minimum Recorded Stage (feet)	2.47
Maximum Recorded Stage (feet)	7.40
Range of Recorded Stage (feet)	4.93
Number of Un-Reported Days	4
Number of Days Qualified as Estimates	46
Number of Days Qualified as Unreliable Estimates	0

Narrative

Un-reported days were due to ice-impacted data. The estimated data consisted of the data set following the ice-impacted period. This continued until a discrete staff reading could be made for verification.

The Washington Department of Fish and Wildlife deployed a smolt trap upstream of the gage. The data collected during the installation of the trap was very erratic. These data were discarded.

Missing staff gage readings were caused by ice damage to the gage and the staff being underwater. These missing readings were calculated based on a regression between the staff and a secondary gage index.

Modeled Discharge

Table 6. Model Summary

Model Type (Slope conveyance, other, none)	Slope Conveyance
Range of Modeled Stage (feet)	6.0 to 9.48
Range of Modeled Discharge (cfs)	1800 to 7780
Valid Period for Model	WY 2011
Model Confidence	2.13 %

Surveys

Table 7. Survey Type and Date (station, cross section, longitudinal)

Type	Date
X-section, Longitudinal	09/27/2011

Activities Completed

The secondary gage index was moved to upstream side of bridge, due to the WDFW smolt trap. The top of the staff plate was reattached after damage caused by ice damage.